Dr.Mahalingam College of Engineering and Technology, Pollachi-642003

Office of Dean Research and Innovation

Report

"Role of Research and Innovation in Undergraduate Engineering Programme"

Knowledge Sharing Session

Date: 22.09.2023

About the Session

The Office of Dean Research and Innovation organized a Knowledge Sharing Session for the benefit of the Students of MCET. The session details are given below for your kind reference.

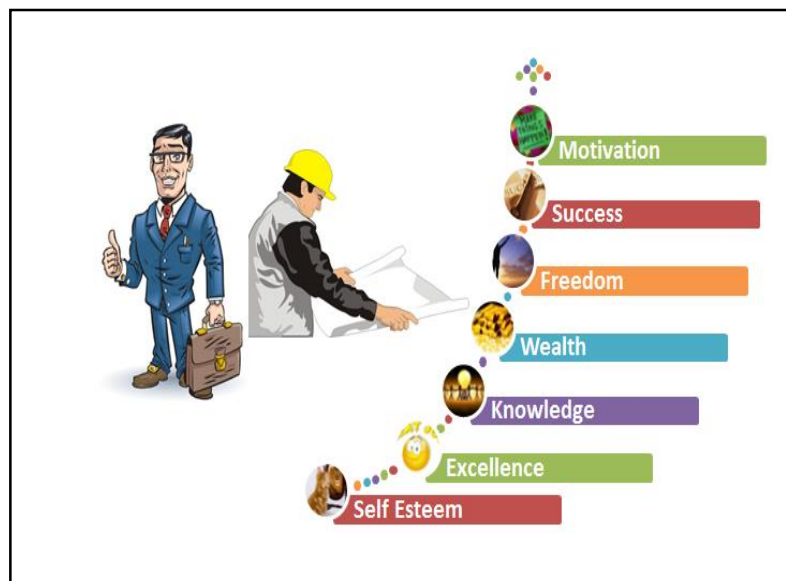| S.No	Name of the Resource Person	Topic	Date &Time	Venue	No. of Participants
1	Dr.S.Ramakrishnan Dean R&I	Role of Research and Innovation in Undergraduate Engineering Programme	19.09.2023	CS Hall	152

Topics Covered:

School Vs College

The difference between school and college encompasses various aspects. They are

- Teachers Vs Professors
- Teaching Vs Training
- Knowledge Vs Skill
- Internal mark Vs Internal mark
- Lab Vs Lab
- Project Vs Project
- Field Trip Vs Internship
- Broad Vs Focused
- Absolute Mark Vs Relative Grade
- Annual Pattern Vs Semester Pattern
- Passive Learning Vs Active Learning
- College admission Vs Career
- Student Vs Citizen

Why Engineering?

- Engineering offers a pathway to success, providing the knowledge and skills to create with excellence, leading to both financial freedom and an enhanced self esteem.

Why R&I?

- IPR, publication, external funding, and consultancy not only promote knowledge but also enhance institutional reputation, and collaborative partnerships with industry, ultimately advancing the institution's academic standing and economic impact.

> - IPR (Patent, Copyright, Trademark)
>
> - Publication (Journal, Conference, Books)
>
> - Funded Project (Government agencies, In-House Projects)
>
> - Consultancy

IPR not a new concept!

A few examples of Patent are:

Ermal Creon Fraze invented and patented flip top cans in 1959.

Mechanical tree climber

- Shri Renga nathan developed a mechanical tree climber that can be used for scaling palm and coconut trees.

- The tree climber uses a 'four-lock pin' system to prevent falls.

- The device now sells across South Asia.

Indian Students developed a 'smart' cane

- It only costs Rs. 3,000, which is about 25 times less than the market price of similar products that are currently available.

- The smart cane helps the visually impaired detect above-the-knee obstructions from a distance of 3 meters.

- It uses ultrasonic technology to identify objects and obstacles around the person.

- Due to this technology, it can also detect objects that are above knee height, which a normal cane cannot do.

Remya Jose -Bicycle powered washing machine

- Due to the lack of access to electricity and money, 14-year-old Remya Jose, from Keezhattor, India, created a bicycle powered washing machine

- This machine created power through pedalling.

- At the age of just fourteen, Remya Jose created her first invention: a pedal-powered washing machine made from recycled bike parts that can make laundry easier for families without electricity. Jose is from Kizhattoor Panchayat in India, and she came up with the idea when she and her twin sister were tasked with the family's household chores after their mother fell ill.
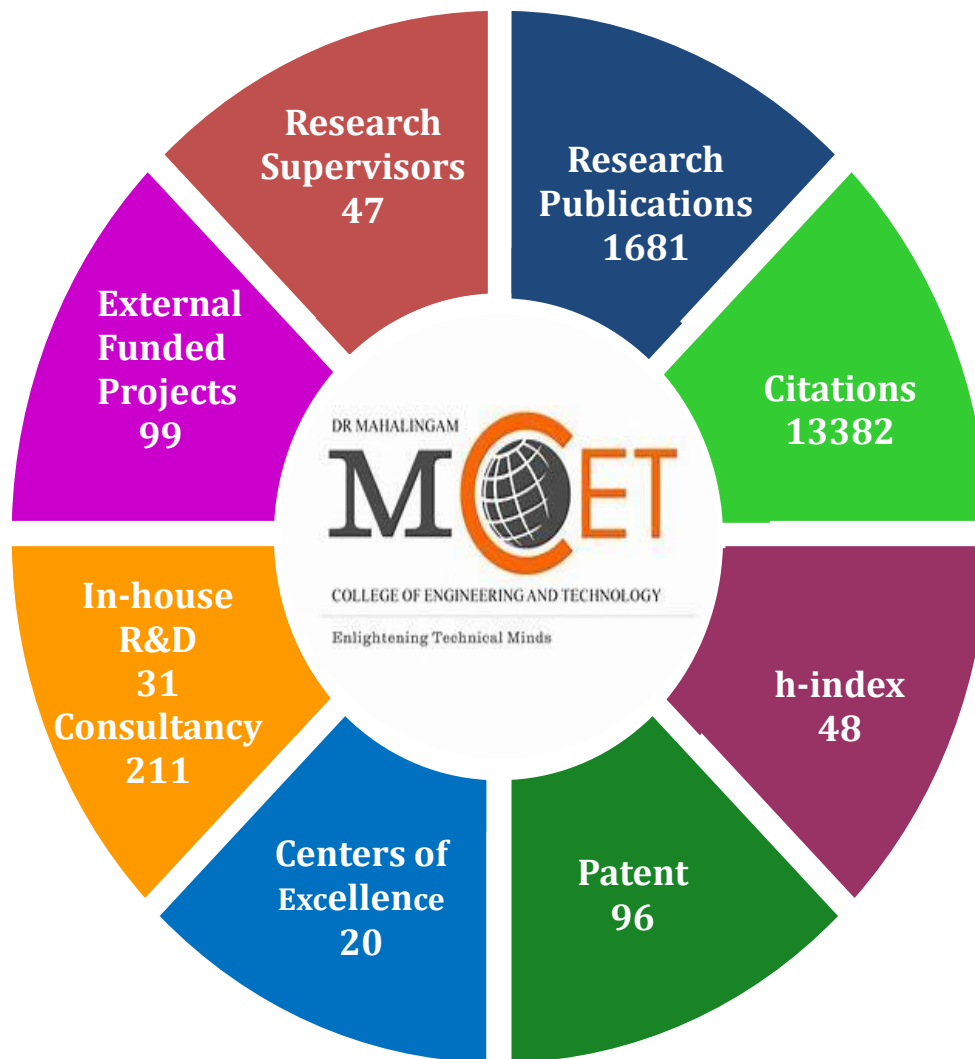
IPR Vs Publication

Trademark	Copyright	Patent	Publication
Brand identities	Creative works	Inventions	Visually any ideas
Distinguishes products or services from competition	Prevents copying of original creative works	Grants exclusive right to exploit an invention	Establishes prior art, helps prove who developed an idea first, prevents future protection claims
No time limits (USA)	70-120 years, depending on many factors	20-year term	No time limits
Examples: words, logos, colors, slogans	Examples: text, music, computer code as written	Examples: specific method or process, chemical composition, machine	Examples: journal article, patent literature database, publication service

Funded projects and Consultancy

Feature	Funded Projects	Consultancy
Nature and Purpose	Funding for research projects	Expert advice and services
Funding Source	External organizations (grants)	Client organizations (clients)
Application Process	Competitive proposal submission	Client-initiated engagement
Use of Funds	Research-related expenses	Compensation for expertise
Intellectual Freedom	High degree of intellectual freedom	Tailored approach to client needs
Results and Reporting	Dissemination of research findings	Client-focused recommendations
Project Scope	Research and knowledge advancement	Addressing specific challenges
Confidentiality	Research outcomes and findings	Sensitive client information
Duration	Project-specific timeframe	Variable duration based on project
Focus	Advancing knowledge and academia	Improving client operations

Faculty Research Summary

Career Pathways

After completing under graduate, there are three potential career directions to pursue.

1. Entrepreneurship
2. Placement
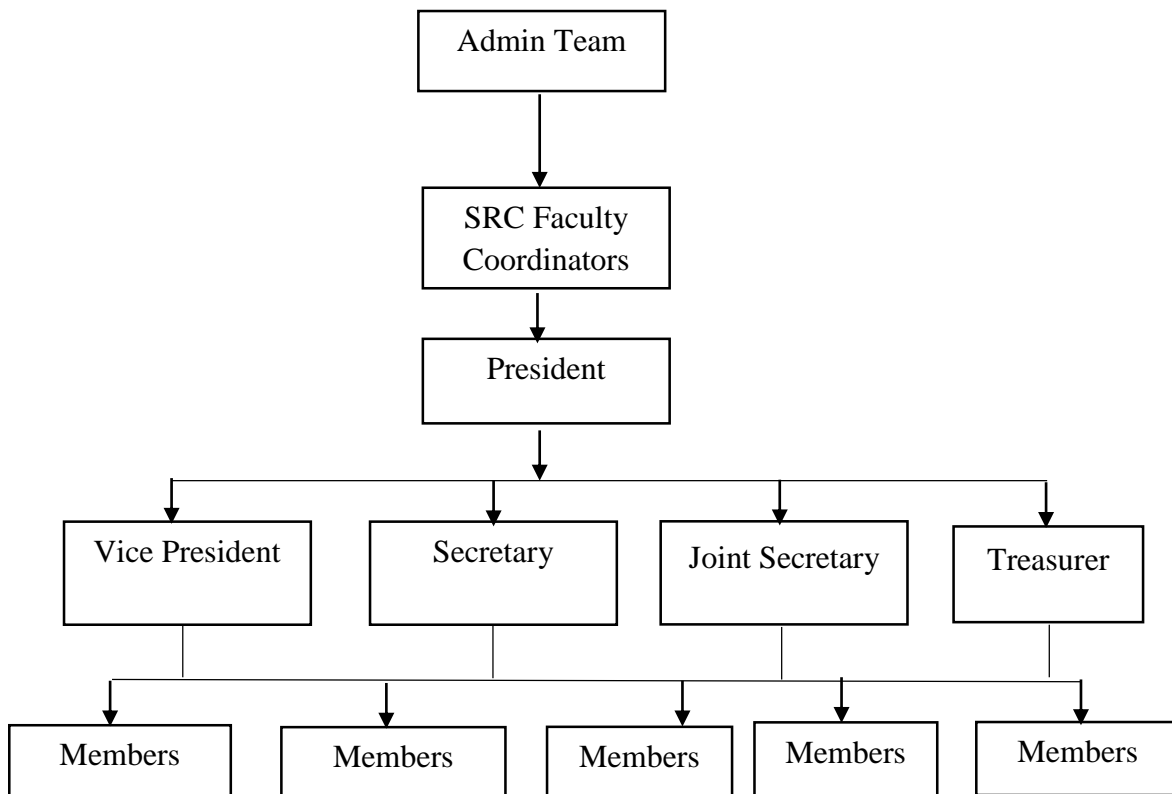3. Competitive Exams
4. Higher Studies

Resume preparation

The expert provides tips for resume preparation and suggests methods to enhance its quality. Additionally, they recommend engaging in extracurricular activities and stress the significance of publishing final year projects at indexed conferences or reputable publication

Tips to build resume

Particulars	Semester	Academic Year	4 Years
Competitive Events-Inter College	1	2	8
Competitive Events-Intra College	1	2	8
Short term training at NIT, IIT, IIIT, etc.,	-	1	4
Hackathons (Industry / Government Agency)	-	-	2
Completion of online certification from NPTEL, Coursera	1	2	8
Internships	-	-	3
Indexed conference publication	-	-	1
Indexed journal publication	-	-	1
Patent	-	-	1
Free Lancing activities	-	1	4
Project	-	1	4

Student Research Council Structure

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Student Research Council
- SRC is a student organization and partially run by students
- SRC helps in research enrichment for the students
- SRC provides a public stage for the presentation, assessment and discussion of their scientific investigations
- SRC encourages the students to organize and to participate in various events

Organizing an Open House Exhibition for peers and school students
- Planning an Open-house exhibition
- Financial funding to construct a prototype or working model
- Identifying the best projects done by the students for the exhibition
- Preparing the posters, circulars, and flyers for promotion
- Making an effort to publish the best projects

Facilitating students' In-House R&D projects with seed money
- Periodical collection of potential proposals from the students
- Proposal review with the help of the Domain experts team
- Recommending the management to provide financial support for potential proposals

- Monitoring the progress of sanctioned projects
- Attempting to publish the best projects

Conducting Workshops, Symposiums and Hackathons for students

- Preparation of budget required for hosting the competitive events
- Brochures and Pamphlets preparation
- Scheduling the hosts, faculty coordinators, or judges
- Designing monetary awards and certificates for the recipients
- Endeavoring to publish the best projects

Facilitation filling of Patent / Design / Copyright / Trademarks for students

- Conduct awareness programmes on "IPR and its significance
- Organize ideathon camps to attract inventions
- Arrangement of expert reviewers to identify potential inventions for patents, designs, copyrights, and trademarks
- Seeking financial support from the management for filing the IPR
- Documentation and promotion of granted patents commercially

Facilitating students' projects in Indexed conferences and journals

- Circulating various calls for indexed conferences and selecting journals through HoDs
- Organize ideathon camps to attract inventions
- Arranging training sessions for the students on "The Art of Writing Research Papers for Indexed Conferences and Journals"
- Reviewing the article's similarity report in the Turnitin software before submission
- Monitoring and consolidating the students' submissions

Facilitating participation in industry-driven competitive events

- Identifying various competitive events in reputed industry and government bodies
- Distributing brochures among the students for the industry-powered competitive events
- Recognizing the potential students for participation in industry-based competitive events
- Monitoring the preparation level of identified batches
- Encouraging and motivating the awardees

Facilitating participation in Academic driven competitive events

- Identifying academic driven competitive events and distributing brochures among students

- Motivating students to participate in the events conducted by centrally funded institutes such as IITs, NITs, and IIITs

- Recognizing the potential students for participation in academic driven competitive events

- Monitoring the preparation level of identified batches

- Encouraging and motivating the awardees

Facilitating students' participation in workshops and seminars at reputed institutions

- Identifying technical events at reputed institutions such as IITs, NITs, and IIITs

- Recognizing students and their accompanying faculty members for their participation

- Providing on-duty support for the participants

Guiding students to complete online certificate courses from NPTEL/ Course Era

- A List of courses will be collected from the HoDs through the NPTEL coordinator for registration

- Students are motivated to finish additional online courses in Udemy and Coursera

- Students who effectively complete online courses such as NPTEL may be exempted from elective courses

Outcomes

- ❖ As outcomes of the session, participants are able to understand career paths, how to develop a resume, roles and responsibilities of students in the SRC.
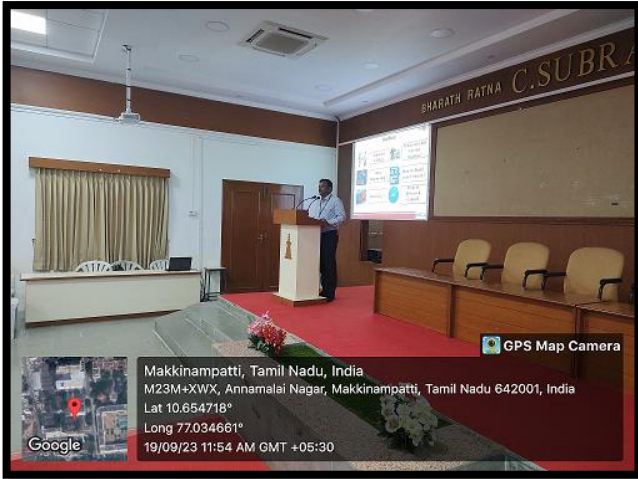
Interaction:

What are the uses of SRC?

Organizing Open House Exhibition, Conducting Inter & Intra college events, facilitating students' In-House R&D projects with seed money, facilitating students' projects in Indexed conferences and journals, etc.

What is the required quality to serve as a SRC member?

Should not be an active member of any other clubs/SGS/NCC/NSS, should not have standing arrears, should be available in the college throughout this academic year.

Dean R&I   **Principal**

--Sd--
Secretary